

CLAIMS

What is claimed is:

1. An electronic paintball marker comprising:
 - a breech having an inlet for receiving a paintball;
 - a first electromagnet disposed in proximity to the breech;
 - a sensor disposed within a portion of the breech for detecting a paintball;
 - a processor in communication with the first electromagnet and sensor; and
 - a bolt moveable between first and second positions, wherein the bolt comprises an elongate body having a magnetically attractable portion and wherein the first electromagnet is actuated by the processor when the sensor detects a paintball, the actuation creating an attraction or a repulsion between the magnetic portion and the first electromagnet.
2. The paintball marker of claim 1, wherein the first electromagnet has a selectively reversible polarity when actuated, causing an intermittent attraction or repulsion of the magnetic portion, moving the bolt between the first and second positions.
3. The paintball marker of claim 1, further comprising a second electromagnet, the first and second electromagnets are alternatively actuated causing an intermittent attraction or repulsion of the magnetic portion, moving the bolt between the first and second positions.
4. The paintball marker of claim 3, wherein the first electromagnet is located in a forward portion of the breech and the second electromagnet is located in a rearward portion of the breech.
5. The paintball marker of claim 3, wherein the elongate body of the bolt

further comprises first and second ends, at least one of the ends having a magnetic portion associated with it.

6. The paintball marker of claim 5, wherein when the sensor detects a paintball in the breech a signal is sent from the processor to activate the first electromagnet creating an attractive force on the at least one magnetic portion of the bolt causing the bolt to move forward.

7. The paintball marker of claim 5, wherein when the sensor detects a paintball in the breech a signal is sent from the processor to activate the second electromagnet creating an repulsive force on the at least one magnetic portion of the bolt causing the bolt to move forward.

8. The paintball marker of claim 5, wherein when the sensor detects a paintball in the breech a signal is sent from the processor to activate the first electromagnet creating an attractive force on the magnetic portion of the first end of the bolt and a signal is sent from the processor to activate the second electromagnet creating an repulsive force on the magnetic portion of the second end of the bolt causing the bolt to move forward.

9. The paintball marker of claim 5, wherein the magnetic portion is integral with the bolt.

10. The paintball marker of claim 5, wherein the magnetic portion is coupled to the bolt by a linkage.

11. An electronic paintball marker comprising:
a breech having an inlet for receiving a paintball;
an electromagnet disposed in proximity to the breech;
a sensor for detecting a paintball disposed within the breech
a processor in communication with the electromagnet and the

sensor; and

a bolt moveable between a first open position and a second closed position, wherein the bolt comprises an elongate body having first and second ends, at least one of said ends having a magnetic portion and wherein the electromagnet is actuated by the processor when the sensor detects a paintball, the actuation selectively creating an attraction or a repulsion between the magnetic portion and the electromagnet.

12. The paintball marker of claim 11, wherein the electromagnet has a selectively reversible polarity when actuated, causing an intermittent attraction or repulsion of the magnetic portion, moving the bolt towards or away from the electromagnet.

13. The paintball marker of claim 11, wherein the electromagnet is located in a rearward portion of the breech.

14. The paintball marker of claim 13, wherein when the sensor detects a paintball a signal is sent from the processor to activate the electromagnet creating an repulsive force on the magnetic portion of the bolt causing the bolt to move forward.

15. The paintball marker of claim 13, wherein when the sensor detects no paintball a signal is sent from the processor to activate the electromagnet creating an attractive force on the magnetic portion of the bolt causing the bolt to move rearward.

16. The paintball marker of claim 13, wherein the breech further comprises a stop having a spring to bias the bolt in a rearward direction.

17. The paintball marker of claim 11, wherein the electromagnet is located in a forward portion of the breech.

18. The paintball marker of claim 17, wherein when the sensor detects no paintball in the breech a signal is sent from the processor to activate the electromagnet creating an attractive force on the magnetic portion of the bolt causing the bolt to move rearward.
19. The paintball marker of claim 17, wherein when the sensor detects a paintball in the breech a signal is sent from the processor to activate the electromagnet creating a repulsive force on the magnetic portion of the bolt causing the bolt to move forward.
20. The paintball marker of claim 17, wherein the breech further comprises a stop having a spring to bias the bolt in a forward direction.
21. A paintball marker with magnetic control comprising:
 - a trigger for initiating a firing sequence in communication with an electronic controller;
 - a bolt for loading a projectile into a breech of the paintball marker during a firing sequence, wherein said bolt is configured to reciprocate in response to a magnetic force acting on the bolt during the firing sequence;
 - a valve located in the paintball marker and configured to selectively supply compressed gas from a compressed gas source to the breech during a firing sequence; and
 - an electronic controller arranged in the body for controlling the firing sequence of the marker in response to actuation of the trigger.
22. The device according to claim 21, wherein the bolt comprises an elongate body having an aperture therethrough, a forward end and a rearward end, further comprising:
 - a magnetically attractable portion provided adjacent the rearward end of the bolt;

a spring adjacent the forward end of the breech for biasing the bolt to a rearward position.

23. The device according to claim 21, wherein the bolt comprises an elongate body having an aperture therethrough, a forward end and a rearward end, further comprising:

a magnetically attractable portion provided adjacent the forward end of the bolt;

a spring adjacent the rear end of the breech for biasing the bolt to a forward position.

24. The device according to claim 21, further comprising a sensor in communication with the controller, the sensor positioned to detect a paintball in the breech in a loading position, the sensor sending a signal to the controller for continuing the firing sequence when a paintball is detected.

25. A paintball marker with magnetic control, comprising:

a trigger in communication with an electronic controller;

a bolt configured to reciprocate in response to a magnetic force applied to a portion of the bolt during a firing sequence;

wherein actuation of the trigger initiates a firing sequence controlled by the electronic controller.

26. The device according to claim 25, wherein the bolt comprises an elongate body having an aperture therethrough, a forward end and a rearward end, further comprising:

a magnetically attractable portion provided adjacent the rearward end of the bolt;

a spring adjacent the forward end of the breech for biasing the bolt to a rearward position.

27. The device according to claim 25, wherein the bolt comprises an elongate body having an aperture therethrough, a forward end and a rearward end, further comprising:

a magnetically attractable portion provided adjacent the forward end of the bolt;

a spring adjacent the rear end of the breech for biasing the bolt to a forward position.

28. The device according to claim 25, further comprising a sensor in communication with the controller, the sensor positioned to detect a paintball in the breech in a loading position, the sensor sending a signal to the controller for continuing the firing sequence.

29. A paintball marker with magnetic control comprising:

a trigger for initiating a firing sequence in communication with an electronic controller;

a breech housing a bolt for loading a projectile into the breech during a firing sequence;

a piston chamber parallel to and in communication with the breech housing a piston that is magnetically moveable from a rearward to a forward position during the firing sequence, the piston mechanically linked to the bolt, wherein said piston is configured to reciprocate in response to a magnetic force acting on the piston during the firing sequence;

a valve located in the paintball marker and configured to selectively supply compressed gas from a compressed gas source to the breech during a firing sequence; and

an electronic controller arranged in the body for controlling the firing sequence of the marker in response to actuation of the trigger.

31. The device according to claim 29, wherein the piston comprises an elongate

body, a forward end and a rearward end, further comprising:
a magnetically attractive portion provided adjacent the rearward end of
the piston;
a spring adjacent the forward end of the piston chamber for biasing the
piston to a rearward position.

32. The device according to claim 29, wherein the piston comprises an elongate
body, a forward end and a rearward end, further comprising:
a magnetically attractive portion provided adjacent the forward end of
the piston;
a spring adjacent the rear end of the piston chamber for biasing the piston
to a forward position.

33. The device according to claim 29, further comprising a sensor in
communication with the controller, the sensor positioned to detect a paintball in
the breech in a loading position, the sensor sending a signal to the controller for
continuing the firing sequence.

33. A bolt for a paintball marker comprising an elongate body having first and
second ends, and at least one magnetic portion, wherein the bolt moves back and
forth within a breech of a paintball marker by magnetic forces exerted on the at
least one magnetic portion of the bolt.

33. The bolt of claim 32, wherein the magnetic portion comprises an
electromagnet.